PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 02 April 1997 (02.04.97)	
International application No. PCT/GB96/01996	**Applicant's or agent's file reference** AF/P5148WO
International filing date (day/month/year) 15 August 1996 (15.08.96)	**Priority date** (day/month/year) 16 August 1995 (16.08.95)
Applicant PHELAN, Sean	

1. The designated Office is hereby notified of its election made:

   [X] in the demand filed with the International Preliminary Examining Authority on:

   12 March 1997 (12.03.97)

   [ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

   [ ] was not

   made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer M. Abidine
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 730.91.11

● PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AF/P5148WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 96/ 01996	International filing date *(day/month/year)* 15/08/1996	Priority date *(day/month/year)* 16/08/1995

International Patent Classification (IPC) or national classification and IPC
G06F17/30

Applicant
PHELAN, Sean

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
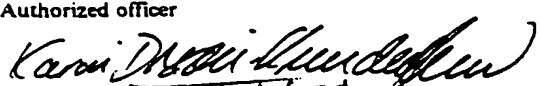
2. This REPORT consists of a total of ___8___ sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consists of a total of _____ sheets.

3. This report contains indications and corresponding pages relating to the following items:

   I ☒ Basis of the report

   II ☐ Priority

   III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   IV ☐ Lack of unity of invention

   V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   VI ☐ Certain documents cited

   VII ☒ Certain defects in the international application

   VIII ☒ Certain observations on the international application

Date of submission of the demand 12/03/1997	Date of completion of this report 13. 11. 97
Name and mailing address of the IPEA: ((o)) European Patent Office D-80298 Munich Tel. (+ 49-89) 2399-0, Tx: 523656 epmu d Fax: (+ 49-89) 2399-4465	Authorized officer K. Dixon-Hundertpfund Telephone No.

I. Basis of the report

1. This report has been drawn up on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

    [x] the international application as originally filed.

    [ ] the description, pages _____, as originally filed,

                      pages _____, filed with the demand,

                      pages _____, filed with the letter of _____,

                      pages _____, filed with the letter of _____,

    [ ] the claims, Nos. _____, as originally filed,

                Nos. _____, as amended under Article 19,

                Nos. _____, filed with the demand,

                Nos. _____, filed with the letter of _____,

                Nos. _____, filed with the letter of _____,

    [ ] the drawings, sheets/fig _____, as originally filed,

                    sheets/fig _____, filed with the demand,

                    sheets/fig _____, filed with the letter of _____,

                    sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

    [ ] the description, pages _____.

    [ ] the claims,   Nos. _____.

    [ ] the drawings,   sheets/fig _____.

3. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims 1-27 (yes)_____ YES	
	Claims _____ NO	
Inventive Step (IS)	Claims 1-27 (yes)_____ YES	
	Claims _____ NO	
Industrial Applicability (IA)	Claims 1-27 (yes)_____ YES	
	Claims _____ NO	

2. CITATIONS AND EXPLANATIONS

1.   The subject-matter of Claims 1 and 17 is new and inventive and therefore satisfies the requirements of Articles 33(2) and (3) PCT.

2.   The following documents cited in the International Search Report are also cited in this preliminary report:

D1: 1994 VEHICLE NAVIGATION AND INFORMATION SYSTEMS CONFERENCE PROCEEDINGS (CAT. NO. 94CH35703), PROCEEDINGS OF VNIS'94 - 1994 VEHICLE AND NAVIGATION AND INFORMATION SYSTEMS CONFERENCE, YOKOMAHA, JAPAN, 31 AUG.-2 SEPT. 1994, ISBN 0-7803-2105-7, 1994, NEW YORK, NY, USA, IEEE, USA, pages 591-596, XP000612712, ARIKAWA M: "Personal dynamic maps based on distributed geographic information servers"

D2: DATABASE, APRIL-MAY 1995, USA, vol. 18, no. 2, ISSN 0162-4105, pages 65-67, XP000612268, DAVIS P: "An interactive hypermedia map viewer (the Xerox PARC map server)"

D3: EP-A-0 239 143 (PIONEER ELECTRONIC CORP)

D4: EP-A-0 379 198 (SHARP KK)

3.1   D2 describes the Xerox Map Server, whose home page pro-
vides the user with a simplified view of the globe. The
user need only point and click on part of the map to
send a request to the server for more detailed informa-
tion. This is accomplished by transmitting the user's
cursor coordinates, which correspond to a predefined lo-
cation in the map database to the map server, which re-
turns the desired location as an in-line image. The re-
sulting map can be selected again for a more detailed
view. IN Xerox Map Server, other options allow the user
to display political borders, rivers, glaciers and other
geographical landmarks. Every map the user can possibly
render has its own Uniform Resource Locator.

Therefore, D2 teaches a method as defined in claim 1,
page 17, lines 1-11 and 17-24 and corresponding computer
system as defined in claim 17, page 20, lines 12-17 and
23-31.

3.2   The problem is to enable a user to see information data
relating to a particular place of interest to him or her
within the image of the geographical area on the visual
display unit.

3.3   This is resolved as defined in claims 1 and 17 by:

- means for/ storing on an information server computer
information data relating to at least one place of in-
terest within the geographical area, said information
data including data representative of the spatial co-
ordinates of the place of interest within the area,

- means for/ transmitting an information request to the
information server computer from the client computer,

and transmitting from the information server computer to the client computer in response to the information request the information data relating to at least one place of interest within the geographical area, and

- means for/ displaying the information data relating to the at least one place of interest on the visual display unit.

3.4   This is not known from any available prior art document nor combination thereof.

4.   Dependent claims 2 to 16 and 18 to 27, which are dependent on claims 1 and 17 respectively, satisfy the requirements of Articles 33(2) and (3) PCT.

5.   For claims 28 and 29, see paragraph VIII, 2.

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

1.1   D1 discloses how to build a dynamic map from information
      derived from several geographic databases, which store
      geographic data as conceptual objects. To create a dy-
      namic map from the geographic databases, the conceptual
      objects of users interest are retrieved by queries from
      the geographic databases. Visualisation methods are
      then used to determine which display objects relating to
      the conceptual objects should actually be displayed on a
      user's visual display unit to provide the visual layers.
      The dynamic map is built up by combining the visual lay-
      ers relating to several geographic data bases.

      D3 discloses a map navigation system, in which a map
      matching between current position data obtained measur-
      ing a current position of a movable body using for ex-
      ample GPS and map data stored beforehand is carried out,
      and the current position of the movable body is dis-
      played on a displayed map. The navigation system in-
      cludes a first storage device for storing position data
      indicating positions of facilities, facility type data
      indicating types of the facilities, and guide marks de-
      noting the facilities and a second storage device for
      storing display type data indicating the types of fa-
      cilities to be displayed on the displayed map.

      D4 discloses a navigation system comprising:
      - a GPS receiver mounted on a vehicle for determining
      the position data including longitude and latitude data
      of the vehicle,
      - a unit mounted on the vehicle to transmit data repre-
      senting the determined position data and an ID code to a
      key station via a communication system,

- a database unit mounted in the key station for storing map data,
- a unit in the key station responsive to the received position data for deriving map data of an area including the position of the vehicle from the data base unit, and for transmitting the data in connection with the derived map data and the ID code to the vehicle,
- a unit in the vehicle responsive to the data transmitted from the key station for displaying a composite image as a visual presentation of the data composed of the position data and the map data.

1.2   The documents D1, D2, D3 and D4 have not been identified in the description nor as the relevant background art disclosed therein been discussed. The requirements of Rule 5.1(a)(ii) PCT are, thus, not fulfilled.

2.   The independent Claims 1 and 17 have not been properly cast out in the two-part form, with those features which in combination are part of the prior art being placed into the preamble. They, therefore, do not meet the requirements of Rule 6.3(b) PCT.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1.   In independent claims 1 and 17, it is not clear what in-
     formation the map request and the information request
     include, so that these claims do not satisfy article 6
     PCT. From the description, (see page 9, lines 16-18),
     it seems that the map request and the information re-
     quest contain coordinate data which specify the
     request's geographical area.

2.   Claims 28 and 29 were not examined as the matter for
     which protection is sought is completely unclear, Ar-
     ticle 6 PCT, because no technical features of the com-
     puter system and method are defined in said claims,
     these claims merely referring to the description and
     drawings.

3.   Dependent method claims 6, 8-10 and 13-16 do not satisfy
     Article 6 PCT because they define "apparatus" features
     and not "steps" features as is usual in method claims.

ATENT COOPERATION TREA

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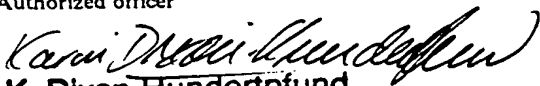
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Date of submission of the demand 12/03/1997	Date of completion of this report **13. 11. 97**
Name and mailing address of the IPEA/ European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer *Kam Dixor Hundertpfund* K. Dixon-Hundertpfund Telephone No.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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citations and explanations supporting such statement

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                         Claims _____ NO

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                         Claims _____ NO

Industrial Applicability (IA)   Claims 1-27 (yes)_____ YES

                         Claims _____ NO

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- means for/ transmitting an information request to the information server computer from the client computer,

and transmitting from the information server computer to the client computer in response to the information request the information data relating to at least one place of interest within the geographical area, and

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D3 discloses a map navigation system, in which a map matching between current position data obtained measuring a current position of a movable body using for example GPS and map data stored beforehand is carried out, and the current position of the movable body is displayed on a displayed map. The navigation system includes a first storage device for storing position data indicating positions of facilities, facility type data indicating types of the facilities, and guide marks denoting the facilities and a second storage device for storing display type data indicating the types of facilities to be displayed on the displayed map.

D4 discloses a navigation system comprising:
- a GPS receiver mounted on a vehicle for determining the position data including longitude and latitude data of the vehicle,
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      request's geographical area.

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      which protection is sought is completely unclear, Ar-
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      drawings.

3.   Dependent method claims 6, 8-10 and 13-16 do not satisfy
      Article 6 PCT because they define "apparatus" features
      and not "steps" features as is usual in method claims.

PCT

REQUEST

The undersigned requests that the present
international application be processed
according to the Patent Cooperation Treaty.

Applicant's or agent's file reference (if desired) (12 characters maximum)	AF/P5148WO

Box No. I   TITLE OF INVENTION

COMPUTER SYSTEM FOR IDENTIFYING LOCAL RESOURCES

Box No. II   APPLICANT

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

PHELAN, Sean
24 Merton Rise
London
NW3 3EN
United Kingdom

[X] This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State *(i.e. country)* of nationality: GB

State *(i.e. country)* of residence: GB

This person is applicant for the purposes of: [X] all designated States [ ] all designated States except the United States of America [ ] the United States of America only [ ] the States indicated in the Supplemental Box

---

Box No. III   FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

This person is:

[ ] applicant only

[ ] applicant and inventor

[ ] inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality:

State *(i.e. country)* of residence:

This person is applicant for the purposes of: [ ] all designated States [ ] all designated States except the United States of America [ ] the United States of America only [ ] the States indicated in the Supplemental Box

[ ] Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV   AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: [X] agent [ ] common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

FLINT, Adam
W. H. Beck, Greener & Co
7 Stone Buildings
Lincoln's Inn
London WC2A 3SZ
United Kingdom

Telephone No.
+ 44 171 405 0921

Facsimile No.
+ 44 171 405 8113

Teleprinter No.
25303 (WHBECK G)

[ ] Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. V	DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) *(mark the applicable check-boxes; at least one must be marked)*:

Regional Patent

☒ AP ARIPO Patent: KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, and any other State which is a Contracting State of the Harare Protocol and of the PCT

☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT

☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT

☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT *(if other kind of protection or treatment desired, specify on dotted line)* ....

National Patent *(if other kind of protection or treatment desired, specify on dotted line):*

☒ AL Albania ....
☒ AM Armenia ....
☒ AT Austria ....
☒ AU Australia.............................
☒ AZ Azerbaijan
☒ BB Barbados
☒ BG Bulgaria ....
☒ BR Brazil ....
☒ BY Belarus
☒ CA Canada
☒ CH and LI Switzerland and Liechtenstein
☒ CN China ....
☒ CZ Czech Republic ....
☒ DE Germany.............................
☒ DK Denmark.............................
☒ EE Estonia ....
☒ ES Spain ....
☒ FI Finland.............................
☒ GB United Kingdom
☒ GE Georgia.............................
☒ HU Hungary ....
☒ IL Israel ....
☒ IS Iceland ....
☒ JP Japan ....
☒ KE Kenya.............................
☒ KG Kyrgyzstan ....
☒ KP Democratic People's Republic of Korea ....
....
☒ KR Republic of Korea ....
☒ KZ Kazakstan.............................
☒ LK Sri Lanka ....
☒ LR Liberia
☒ LS Lesotho ....
☒ LT Lithuania
☒ LU Luxembourg.............................

☒ LV Latvia
☒ MD Republic of Moldova ....
☒ MG Madagascar ....
☒ MK The former Yugoslav Republic of Macedonia
....
☒ MN Mongolia
☒ MW Malawi ....
☒ MX Mexico ....
☒ NO Norway
☒ NZ New Zealand ....
☒ PL Poland ....
☒ PT Portugal ....
☒ RO Romania
☒ RU Russian Federation ....
☒ SD Sudan
☒ SE Sweden
☒ SG Singapore
☒ SI Slovenia ....
☒ SK Slovakia ....
☒ TJ Tajikistan ....
☒ TM Turkmenistan ....
☒ TR Turkey ....
☒ TT Trinidad and Tobago ....
☒ UA Ukraine ....
☒ UG Uganda ....
☒ US United States of America.............................
....
☒ UZ Uzbekistan ....
☒ VN Viet Nam ....

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

☒ CU Cuba ....
☐ ....
☐ ....

In addition to the designations made above, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except the designation(s) of _____ .
The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)*

x No. VI   PRIORITY CLAIM   Further priority claims are indicated in the Supplemental Box ☐

e priority of the following earlier application(s) is hereby claimed:

Country (in which, or for which, the application was filed)	Filing Date (day/month/year)	Application No.	Office of filing (only for regional or international application)
item (1) GB	16/08/95	9516762.3	
item (2)			
item (3)			

Mark the following check-box if the certified copy of the earlier application is to be issued by the Office which for the purposes of the present international application is the receiving Office (a fee may be required):

[X] The receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s) : (1)

Box No. VII   INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):* ISA /

Earlier search *Fill in where a search (international, international-type or other) by the International Searching Authority has already been carried out or requested and the Authority is now requested to base the international search, to the extent possible, on the results of that earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request.*

Country (or regional Office):   Date (day/month/year):   Number:

Box No. VIII   CHECK LIST

This international application contains the following number of sheets:
1. request : 3 sheets
2. description : 16 sheets
3. claims : 7 sheets
4. abstract : 1 sheets
5. drawings : 2 sheets

Total : 29 sheets

This international application is accompanied by the item(s) marked below:
1. ☐ separate signed power of attorney
2. ☐ copy of general power of attorney
3. ☐ statement explaining lack of signature
4. [X] priority document(s) identified in Box No. VI as item(s): (1)
5. ☐ fee calculation sheet
6. ☐ separate indications concerning deposited microorganisms
7. ☐ nucleotide and/or amino acid sequence listing (diskette)
8. ☐ other (specify):

Figure No. ___2___ of the drawings (if any) should accompany the abstract when it is published.

Box No. IX   SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

For the applicant:

FLINT, Adam
W. H. Beck, Greener & Co.

— For receiving Office use only —

1. Date of actual receipt of the purported international application:

2. Drawings:

3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:

☐ received:

4. Date of timely receipt of the required corrections under PCT Article 11(2):

☐ not received:

5. International Searching Authority specified by the applicant: ISA /

6. ☐ Transmittal of search copy delayed until search fee is paid

— For International Bureau use only —

Date of receipt of the record copy by the International Bureau:

Form PCT/RO/101 (last sheet) (January 1994; reprint July 1996)   *See Notes to the request form*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
AF/P5148WO		

International application No.	International filing date(*day/month/year*)	(Earliest) Priority Date (*day/month/year*)
PCT/GB 96/01996	15/08/1996	16/08/1995

Applicant

PHELAN, Sean

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of ___3___ sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

---

1. [ ] Certain claims were found unsearchable (see Box I).

2. [ ] Unity of invention is lacking (see Box II).

3. [ ] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing

   [ ] filed with the international application.

   [ ] furnished by the applicant separately from the international application,

   [ ] but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

   [ ] Transcribed by this Authority

4. With regard to the **title**, [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

   Figure No. ___2___ [X] as suggested by the applicant.   [ ] None of the figures.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DATABASE, APRIL-MAY 1995, USA, vol. 18, no. 2, ISSN 0162-4105, pages 65-67, XP000612268 DAVIS P: "An interactive hypermedia map viewer (the Xerox PARC map server)" see the whole document	1-27
A	EP,A,0 539 143 (PIONEER ELECTRONIC CORP) 28 April 1993 see abstract; claims; figures 1,7-12	1-27
A	EP,A,0 379 198 (SHARP KK) 25 July 1990 see column 2, line 26 - column 3, line 13; claims	1-27

1

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP-A-0539143	28-04-93	JP-A-	5113752	07-05-93
		JP-A-	5113753	07-05-93
		JP-A-	5113754	07-05-93
		EP-A-	0747670	11-12-96
EP-A-0379198	25-07-90	JP-A-	2189488	25-07-90
		JP-A-	2206900	16-08-90
		AU-B-	614893	12-09-91
		AU-A-	4799790	26-07-90
		DE-D-	69021900	05-10-95
		DE-T-	69021900	18-04-96
		US-A-	5025261	18-06-91

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6   G06F17/30   G01C21/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols) IPC 6   G06F   G01C
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	1994 VEHICLE NAVIGATION AND INFORMATION SYSTEMS CONFERENCE PROCEEDINGS (CAT. NO.94CH35703), PROCEEDINGS OF VNIS'94 - 1994 VEHICLE NAVIGATION AND INFORMATION SYSTEMS CONFERENCE, YOKOHAMA, JAPAN, 31 AUG.-2 SEPT. 1994, ISBN 0-7803-2105-7, 1994, NEW YORK, NY, USA, IEEE, USA, pages 591-596, XP000612712 ARIKAWA M: "Personal dynamic maps based on distributed geographic information servers" see page 591, left-hand column, line 1 - page 593, left-hand column, paragraph 2.2 see page 593, right-hand column, paragraph 3.2 see page 596, left-hand column, line 9 - line 44 --- -/--	1-27

[X] Further documents are listed in the continuation of box C.	[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search 11 December 1996	Date of mailing of the international search report 19. 12. 96
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Fournier, C

International Application No

PCT/GB 96/01996

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DATABASE, APRIL-MAY 1995, USA, vol. 18, no. 2, ISSN 0162-4105, pages 65-67, XP000612268 DAVIS P: "An interactive hypermedia map viewer (the Xerox PARC map server)" see the whole document ---	1-27
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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
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		AU-A-	4799790	26-07-90
		DE-D-	69021900	05-10-95
		DE-T-	69021900	18-04-96
		US-A-	5025261	18-06-91

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(74) Agent: FLINT, Adam; W.H. Beck, Greener & Co., 7 Stone Buildings, Lincoln's Inn, London WC2A 3SZ (GB).

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Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

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</table>

(54) Title: COMPUTER SYSTEM FOR IDENTIFYING LOCAL RESOURCES

(57) Abstract

A map of the area of a client computer (10) is requested from a map server (11). Information relating to a place of interest is requested from an information server (12) by the client computer (10). The information is superimposed or overlaid on a map image at a position on the map image corresponding to the location of the place of interest on the map. The information (or "overlay") server (12) may contain details of, for example, hotels, restaurants, shops or the like, associated with the geographical coordinates of each location. The map server (11) contains map data, including coordinate data representing the spatial coordinates of at least one point on the area represented by the map.
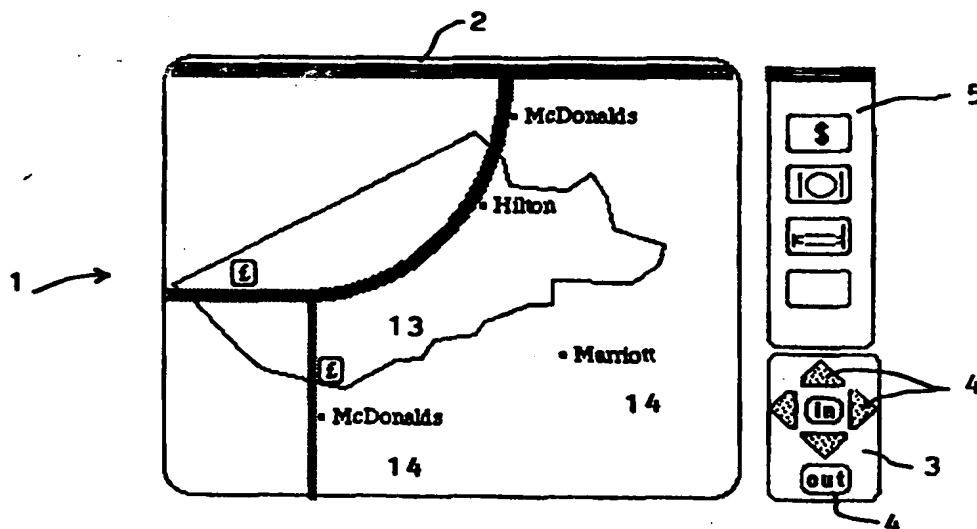
-1-

COMPUTER SYSTEM FOR IDENTIFYING LOCAL RESOURCES

This invention relates to computer systems, and to
methods of operating computer systems. The invention has

5   particular relevance to the so called "World Wide Web",
which is part of the global computer network system known
as the Internet.

The Internet and the World Wide Web ("WWW" or "The
Web") have been described in great detail in a large number

10   of publications in recent months. The Web consists
essentially of an enormous number (at the last count, many
millions, and expanding rapidly) of "host" or "server"
computers which contain information of various types which
users may wish to access. Users of the system employ a

15   "client" computer, running "client" software, in order to
access the information. Such client programs are usually
known as "browsers".

Various standard protocols enable requests to be
formulated by the many client computers, and passed via the

20   Internet to whichever computer holds the relevant
information, which then returns the information to the
client, using the same protocols.

The protocol which is used on the World Wide Web is an
agreed standard, known as the HyperText Transfer Protocol

25   (HTTP).

The language in which "Web" pages are generated is
known as "HyperText Markup Language" (HTML).

The success of HTML/HTTP is based to a large extent on
the ability of HTTP to produce so called "hypertext links"

30   in the form of some sort of displayable icon on the
computer screen of the client. The icon may be a graphical
icon, or, more commonly, simply text represented in a form
which is visually distinct from the surrounding text.
Activating the icon with a pointing device (for example,

35   clicking on it with a mouse pointer) causes the browser
software to formulate a request for further information to

-2-

be sent to the "client". This further information may be
simply a "page" of text data, or it may be graphical data,
or sound or video data. It may reside on the same server
computer as the page containing the hypertext link, but
5   need not do so, and will often reside on a computer many
thousands of miles away.

The World Wide Web has recently attracted increasing
attention as an advertising medium for various goods and
services. The advantage of the Web as an advertising
10   medium is that a single connection allows access by
millions of potential customers around the world, without
any need for the customers to know or be interested in the
physical location of the server computer which is providing
the information. Links to the pages of interest may be
15   provided by hundreds or thousands of other pages, provided
on other servers, throughout the world.

For many goods and services, the lack of a physical
"place" on the Internet is an advantage. A consumer, no
matter where his location, is presented with a familiar
20   interface, which makes access very straightforward. The
very size of the World Wide Web however, means that, as
presently constituted, it is not well suited to answering
questions about places and proximity. For example, it is
not possible, using existing Web search tools to answer
25   questions such as "where is the nearest hamburger
restaurant?" in spite of the enormous benefit which would
accrue to major restaurant chains and the like in providing
their own answers to such questions, with the speed and
ease for which the Internet is famous.
30   The present invention seeks to address the problem of
facilitating access by Internet users, and in particular by
users of the World Wide Web, to Internet resources, where
the primary differentiator between different places of
interest is geographical.
35   According to a first aspect of the present invention,
there is provided a method of operating a computer system,

the method comprising the steps of:

storing on a map server computer map data representative of a map of a geographical area;

storing on the map server computer coordinate data
5   indicative of the spatial coordinates of at least one point associated with the geographical area represented by the map, so as to enable correlation of points on the map with their corresponding geographical location;

storing on an information server computer information
10   data relating to at least one place of interest within the geographical area, said information data including data representative of the spatial coordinates of the place of interest within the area;

transmitting a map request to the map server computer
15   from a client computer, and transmitting from the map server computer to the client computer in response to the map request the map data and the coordinate data associated with the area represented by the map;

utilising the map data to display an image of the map
20   on a visual display unit associated with the client computer;

transmitting an information request to the information server computer from the client computer, and transmitting from the information server computer to the client computer
25   in response to the information request the information data relating to at least one place of interest within the geographical area; and,

displaying the information data relating to at least one place of interest on the visual display unit.
30   The map request may be transmitted before the information request, the information request being formulated by including coordinate data provided by the map server.

The information request may be transmitted before the
35   map request, the map request being formulated by including coordinate data provided by the information server.

According to a second aspect of the present invention, there is provided a computer system, the computer system comprising:

a map server computer for storing map data
5   representative of a map of a geographical area and coordinate data representative of the spatial coordinates of at least one point lying within the area represented by the map;

an information server computer for storing information
10   data representative of at least one place of interest within the geographical area, said data including data representative of the spatial coordinates of the place of interest within the area; and,

a client computer, the client computer having a visual
15   display unit;

wherein the client computer includes
means for transmitting a map request to the map server computer to request transfer to the client computer of the map data and the coordinate data
20   associated with the area represented by the map,
means for displaying an image of the map on the visual display unit, and
means for transmitting an information request to the information server computer to identify places of
25   interest known to it and lying within the geographical area,

wherein the information server computer includes means for transmitting to the client computer in response to the information request the data representative of at least one
30   place of interest within the geographical area, and

wherein the client computer includes means for displaying said data associated with the place of interest on the visual display unit.

The order in which the map server and information
35   server are mentioned above is not meant to imply any particular restriction as to the order in which the servers

are accessed by the client. As with any Web search, either
server could be accessed first. A link provided initially
by the information server may link directly to a map server
in accordance with the invention, for example.

5　　　　In a preferred embodiment, a client device which has
the capabilities of both a cellular telephone and a Web
browser may pass the names and/or geographical coordinates
of its surrounding cellular base stations to the map and/or
overlay server computers. Such location information may be
10　utilised by the map server computer to deliver a map of the
current location of the client device, and/or by the
overlay server computer to identify facilities near to the
current location of the client device.

　　　　The information relating to the place of interest may
15　be superimposed or overlaid on the map image at a position
on the image corresponding to the location of the place of
interest on the map. Thus, for example, the information
(or "overlay") server may contain details of, for example,
hotels, restaurants, shops or the like, associated with the
20　geographical coordinates of each location. The map server
contains map data, including coordinate data representing
the spatial coordinates of at least one point on the area
represented by the map. Further data is also required, so
as to enable correlation of points on the map with their
25　corresponding geographical location. Such further data may
be, for example, the coordinates of an additional point on
the map. Preferably, the map's scale and overall
dimensions are included. Alternatively, coordinates of two
opposite corners of the map are included. As a further
30　alternative, the said further data may include a simple
scale factor and a direction factor.

　　　　In a further preferred embodiment, the map server may
be provided with a list of categories of places of
interest, together with details of the respective
35　information servers on which further information about each
category is located. Each of these categories may be

associated with a respective icon on the VDU of the client.
In an alternative embodiment, such a list of categories may
be provided on a further server.

5   In an embodiment, initially, the client computer may
display the map as a simple outline, with no superimposed
icons. When one of the "category" icons is activated (for
example, by clicking with a mouse or other pointing
device), the client computer formulates a request to the
appropriate information server for the information server
10   to supply a list of locations known to it which lie within
the rectangle defined by the said coordinates. The
information supplied by the information server may include
textual, graphical, sound, video or other information, and
may include additional hypertext links to other locations
15   or facilities on the Web, which themselves may include
textual, graphical, sound, video or other information.

It is a particular advantage of the system that the
various information servers do not need to have knowledge
of the map server software provided on the map server, and
20   vice versa. All that is required in order for the relevant
data to be supplied to the client computer is a consistent
protocol for providing the coordinates of the various
places of interest.

Two or more information servers can provide "places of
25   interest" data independently, without either having any
knowledge of the other. For example, one server may
provide locations of hotels, a second may provide locations
of restaurants, and a third may provide locations of print
shops or the like. All of the data (for example, hypertext
30   links, icons etc.) can be overlaid on a single map on the
screen of the client computer with hypertext links provided
to the various source data on the different overlay or
information server computers.

In a particularly preferred embodiment, the client
35   computer may include locating means for establishing the
current geographical location of the client computer. This

may be by means of a satellite system such as the Global
Positioning System. The client computer preferably
includes means for passing the said location information to
the information server computer. Such location information
may be utilised by the information server computer to
identify facilities within a given radius of the current
geographical location of the client computer. This
facility makes the method of the invention of particular
usefulness to portable computer systems.

The client computer may include means for scrolling or
zooming the map image, to display an image of a different
geographical area, and means for varying the displayed data
relating to the places of interest, so as to take account
of the change in the display geographical area. This may
take the form simply of changing the position of the icon
or hypertext data relating to particular points of
interest, so as to take account of the change in the
display geographical area. Preferably, however, the client
computer may include means for formulating a further
request to an information server, to identify places of
interest lying within the new geographical area.

An embodiment of the present invention will now be
described by way of example with reference to the
accompanying drawings, in which:

Figure 1 is a graphical representation of a client
screen, showing a simple map with "category" icons;

Figure 2 shows the same map after retrieval of
information relating to various places of interest (in this
case, hotels and restaurants); and,

Figure 3 is a schematic representation of information
flow between the map and overlay servers and the client
computer.

Referring to Figure 1, the screen 1 of a client
computer 10 is shown, as generated by an HTML document.
The screen 1 contains three windows or frames: a "map"
frame 2, a "navigation" frame 3 containing buttons 4 for

zooming and panning the map, and an "info" frame 5 which controls the display of overlay information on the map.

The overall information flow is indicated graphically in Figure 3. A map request to a map server computer 11
5   from the client computer 10 specifies the geographical coordinates of the map, which may be the bottom left corner of the map and the top right corner of the map or centre point and scale, for example. The coordinates may be supplied to the map server 11 as the latitude and longitude
10 in degrees of the centre point of the map and its scale, for example.

The map is supplied by the map server 11 in a map response in any of the various conventional graphics formats, for example in "GIF" or "JPEG" format. In a
15 preferred embodiment, the map server 11 will also return the coordinates covered by the map, but this is not essential as they may be inferred from the map request.

Also supplied by the map server 11 are the icons 6,7,8,9, which are displayed within the "info" frame 5.
20 Icon 6 indicates banks, icon 7 restaurants, icon 8 hotels, etc. Information relating to each category of facilities (banks, restaurants, hotels, etc.) is held on an information server computer 12. The information server computers 12 for the different information categories may
25 be the same or different.

Clicking with the mouse on a respective icon 6-9 causes the client computer 10 to formulate an information request, which may be in the form of a standard Web URL (Uniform Resource Locator) including additional protocol
30 elements relating to the location which the user wishes to search.

An important feature of the present invention is the addition of a universally recognised standard for geographic reference (i.e. longitude and latitude) to the
35 protocols and standards of the Internet and the World Wide Web, and its use to combine data from mutually independent

sources.

Information requests produced by the client computer
10 may be of various forms, provided that a protocol is
provided for the exchange of the geographical coordinate
5   data.

Figure 3 shows the two key transaction types used by
the client 10. One transaction type consists of the
information request, which goes to a provider of
information to be overlaid on a map, such as an information
10   server computer 12, followed by a response from that
provider 12. The other transaction type is a map request,
which goes to a map server computer 11, followed by a map
response back to the client 10.

Both request types take the form of Uniform Resource
15   Locators (URLs) which are transmitted in the same way as
any other WWW request. Unlike other URLs, the map and
information requests contain longitude and latitude
information which specify the request's geographical
coverage.

20   In a preferred embodiment, the responses also contain
longitude and latitude information, but this is not
essential as they may be inferred from the requests.

In a simple embodiment, the information response from
the overlay or information server 12 consists of an HTML
25   document. This document contains HTML tags specifying one
or more overlay icons and their screen positions. It also
specifies the map to be displayed underneath the icons.

In a more advanced embodiment, suitable for client
browsers capable of running Java or some other local
30   processing capability, the response from the information
server 12 specifies one or more overlay icons and
associates a longitude and latitude with each. Longitude
and latitude are resolved to screen position by a Java
Applet or other locally executed program.
35   The most important difference between the simple
embodiment and the advanced embodiment mentioned above is

the point at which the longitude and latitude of overlay
icons are resolved to positions on the screen 1 of the
client 10. Advanced embodiments place this function within
the client browser, where a Java Applet or some other local
5   processing carries out the transformation. In simple
embodiments, the transformation is carried out in the
information server. Simpler embodiments are therefore less
powerful and have less platform-independence, but can be
implemented on simple client browsers.
10   The "map request" shown in Figure 3 may take the
following form:

        http://www.multimap.com?lon="-0.1666"
            &lat="51.545"&scale="25000"&xp="500"&yp="300"
15

        This map request contains parameters specifying the
longitude, latitude and scale of the map, and also its
dimensions in horizontal and vertical pixels (xp and yp).
        An "information request" may be of the form:
20

        http://mcdonalds.com/locations.cgi?lat="51.5449"
            &lon="-0.16658"&radius="1.6"

        This is a search request to a server called
25 mcdonalds.com requesting all locations within a one mile
radius of a location in Hampstead, London.
        The map requests and information requests may contain
any number of elements from an expandable list of
parameters, including the following examples:
30

    lat=51.5449   Latitude in degrees, as a single real number
    lon=-0.16658   Longitude in degrees, as a single real
                     number
    radius=1.6   Radius in kilometres
35 max=10   Maximum number of locations in search result
    xp=500   Horizontal size of the map in pixels

-11-

```
        lon=-0.16658    Longitude in degrees, as a single real
                        number
        radius=1.6      Radius in kilometres
        max=10          Maximum number of locations in search result
     5  xp=500          Horizontal size of the map in pixels
        yp=300          Vertical size of the map in pixels
        scale=25000     Map scale
        vr=0            Virtual Reality level - 0 for "reality",
                        other values specify other "virtual worlds"
    10                  for testing, simulation or whatever
```

There are a number of other possible terms that may be included.

In simpler embodiments, the map response is an image
15 file encoded in either GIF or JPEG format, for example. It is sent in the same format as other image files on the Web. In more advanced embodiments, the map response may be take the form of either a raster image or vector data, and may be rendered at the client by a Java Applet or other local
20 processing.

The information response can take one of a number of different forms, depending on the capabilities of the client browser.

In a preferred implementation, the information
25 response takes the form of an HTML document which contains references to one or more overlay icons, each with an associated longitude and latitude, together with a call to a Java Applet or some other form of local processing.

In a simpler implementation, the HTML document may
30 contain the screen positions of the icons as pixel offsets rather than longitude and latitude. In this case the positioning of overlay icons on maps is achieved through the positioning capabilities of other HTML functions such as background images, frames, horizontal and vertical image
35 offsets and others.

An example of such an information response is:

-12-

```
<HTML> <BODY background="http://multimap.com?
lon=-0.1666&lat=51.545&scale=25000&xp=500&yp=300">
<imgsrc="icon.gif" hspace=240 vspace=140> </BODY></HTML>.
```
In this example, a map is requested from the map server
"multimap.com" and is displayed as a background image, and
the icon in the file "icon.gif" is overlaid at the centre
of the map. Preferably, in order to work correctly, this
"map as background" technique should be implemented within
a fixed-size frame.

When the user clicks on one of the subject buttons
6-9, the client 10 establishes a connection to the
information server whose URL is embedded in the button 6-9.
The client 10 sends an information request, as described
above.

The information server 12 generates a list of the
entries in its database having a longitude and latitude
within the bounds specified, and uses them to create an
information response, as described above. Each entry is
associated with a displayable name and/or icon and
optionally a longitude and latitude. The icons or text may
be highlighted to show further information such as levels
of availability, etc.

The client software normally overlays the displayable
names and/or icons on its map.

The user has the option of opening one or more icons
from the screen, normally by clicking on the displayable
name. This passes the URL to the Web browser which opens
it in the usual manner.

In Figure 2, the current location has been sent to
three servers: one run by a high street bank, which
returns the location of cashpoint machines, one by an
independent hotel reservation system and one by a well-
known fast food chain.

The result of the responses by the overlay servers 12
are shown in Figure 2, in which the same map is displayed
with icons 13 representing the various facilities reported

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by the second server 12, and hypertext links 14 to text
pages or other Web facilities, in the usual way.

It should be noted that the client computer 10 may be
used to transmit the information request with geographical
5   data first. The overlay or information server 12 responds
with information data, including coordinate data, relating
to the requested services for example. This data, as well
as being used to generate the display on the client
computer 10, can be used to formulate the map request
10   including coordinate data for transmission by the client
computer 10 to the map server 11. The map server 11 then
responds with the map data, which is then transmitted to
the client computer 10. The map can then be displayed on
the client computer visual display unit and overlaid with
15   graphics representing the information data. In other
words, either the map request or the information request
can be formulated first for transmission to the appropriate
server 11,12.

The architecture of the preferred system is such that
20   it can support a movable map window. A user can scroll
North, South, East or West on the screen and see more
detail appear, and can zoom in and out for more detail or
for a wider perspective using the zoom and move buttons 4.
This also enables a moving display, such as a hand-held
25   device or a rolling map installed in a car, to be
dynamically updated with new locations as the displayable
window moves over them.

Although the client computer 10 may be a stationary PC
connected to the Internet, the architecture is designed to
30   support mobile clients such as car navigation systems and
personal digital assistants (PDAs). The client software
preferably supports direct connection to Global Positioning
System (GPS) receivers, and preferably implements the NMEA
0183 standard for exchange of navigational data. If the
35   client is also a cellular telephone, it preferably supports
the transfer of information derived from the cellular

network. In a preferred embodiment, the client transfers
its own position to the information server and map server
within the HTTP protocol by adding an HTTP header line to
its request messages. In the case that the client is
5   connected to a GPS receiver and therefore knows its exact
location, it can add an HTTP header line as follows:
remote_position: lon="-0.1666"; lat="51.545". In the case
that the client does not have its exact position, but does
have access to the name of its nearest cellular base
10   station, it can add an HTTP header line as follows:
remote_cellname: LONDON-SW-5. A map server or information
server which maintains data on the locations of cellular
base stations can convert the cell name to a location and
deliver the appropriate map and/or overlay information. In
15   the case that the client is not able to add HTTP header
lines as described above, location and/or cell names may be
transmitted within other HTTP headers or within the HTML
protocol, but such embodiments are not considered
preferable. It is important to note that the client will
20   often request information on a location other than its own
current location, and that the location of interest is
transferred within the Map Request/Information Request
URLs, while the client's own location is transferred in the
HTTP header. This combination allows the server computers
25   to implement a wide range of additional functions, such as
displaying the distance from the current location to the
location of interest. In the case that the client's
location is known to be changing, such as a cellular phone
connected to a GPS receiver, the screen display may be
30   refreshed on a regular basis to show the client's current
location. This refresh may be achieved by using the
"refresh" function within the HTTP/HTML protocols, or it
may be achieved using the local programmability of the
client.

35   It is particularly preferred that the additional
functionality provided within the World Wide Web, and its

architecture, is built within the extensible framework of HyperText Markup Language (HTML) and the HyperText Transfer Protocol (HTTP). The extensions to HTML/HTTP are thus preferably entirely compatible with existing Web standards
5   and do not seek to modify or replace any part of the Web architecture.

In a preferred embodiment, the functionality described above is added to the client computer 10 by providing additional software for a known Web browser (for example,
10   Netscape, Mosaic, etc.). This software may be implemented as separate programs (i.e. a "helper application"), or as plug-in programs that execute within a browser program, or as Java Applets which are downloaded and executed as required.

15   Alternatively, a subset of the full functionality may be implemented using the browser's standard display and positioning capabilities only. An implementation of the latter case requires greater functionality in the information server, and is a preferred implementation in
20   circumstances where it is difficult or impossible to add functionality to the client browser.

The server computers 11,12 may employ well-known standard database tools in conjunction with known Web server packages, in order to recognise the requests and
25   generate the responses described above.

Another important feature of the present invention is that maps and overlay information can be "persistent". That is, pointers to maps or places can be stored in databases on the client computer 10 and become a permanent
30   feature of displays. A typical use of this feature would be to store the user's home location and display it on any map covering that location.

In a preferred embodiment, persistent locations are stored using the extensions to HTTP known as "magic
35   cookies". The magic cookie parameters used are based upon the request parameters listed above, i.e.:

Set-Cookie: Home="lon=-0.1666&lat=51.545";

Software may be provided for the conversion of postal codes (zip codes) into longitude and latitude information.

5   Software may be provided for the conversion of full or partial addresses into longitude and latitude information. This software is normally provided on the map server 11; in this case, the user enters an address or postcode in a form and sends this to the map server. The map server responds

10   with an HTML document containing longitude and latitude, and the user receives a map of the locality of the address or postcode. Alternatively, such software can be provided on the client computer 10.

The system and method of the present invention avoids

15   the classic problems of Geographic Information Systems (GISs) by imposing a single, standardised geographic reference model, and restricting data exchanges to those classes of geographic information which can conform to the reference model.

20   Because of this, servers providing information do not have to deal with maps, map ownership issues or mapping software, and information from several different sources can be integrated on a single screen.

It is of course envisaged that the invention may be

25   implemented in ways which are different from the ways specifically exemplified above. For example, the coordinate data embodied in the map and facility information may be presented in ways other than in absolute latitude and longitude format.

30   Embodiments of the present invention have been described with particular reference to the examples illustrated. However, it will be appreciated that variations and modifications may be made to the examples described within the scope of the present invention.

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CLAIMS

1.   A method of operating a computer system, the method comprising the steps of:

5   storing on a map server computer (11) map data representative of a map of a geographical area;

storing on the map server computer (11) coordinate data indicative of the spatial coordinates of at least one point associated with the geographical area represented by

10   the map, so as to enable correlation of points on the map with their corresponding geographical location;

storing on an information server computer (12) information data relating to at least one place of interest within the geographical area, said information data

15   including data representative of the spatial coordinates of the place of interest within the area;

transmitting a map request to the map server computer (11) from a client computer (10), and transmitting from the map server computer (11) to the client computer (10) in

20   response to the map request the map data and the coordinate data associated with the area represented by the map;

utilising the map data to display an image of the map on a visual display unit (1) associated with the client computer (10);

25   transmitting an information request to the information server computer (12) from the client computer (10), and transmitting from the information server computer (12) to the client computer (10) in response to the information request the information data relating to at least one place

30   of interest within the geographical area; and,

displaying the information data relating to at least one place of interest on the visual display unit (1).

2.   A method according to claim 1, wherein the map request

35   is transmitted before the information request, the

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information request being formulated by including coordinate data provided by the map server (11).

3.   A method according to claim 1, wherein the information
5   request is transmitted before the map request, the map request being formulated by including coordinate data provided by the information server (12).

4.   A method according to any of claims 1 to 3, including
10   the step of superimposing information relating to the place of interest on the image on the visual display unit, at a position on the image corresponding to the location of the place of interest on the map.

15   5.   A method according to claim 4, wherein the information superimposed on the image is a hypertext link.

6.   A method according to claim 4 or claim 5, wherein the client computer (10) includes means for scrolling the map
20   image to display an image of a different geographical area, and means for varying the displayed data relating to the at least one place of interest on the visual display unit (1) so as to take account of the change in the displayed geographical area.
25

7.   A method according to claim 6, wherein the varying of the displayed data includes the step of shifting the position of the superimposed information in response to scrolling of the map image.
30

8.   A method according to claim 7, wherein the client computer (10) includes means for formulating a further request to the information server (12) to identify places of interest lying within the different geographical area.
35

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9.   A method according to any of the preceding claims,
wherein the client computer (10) includes means for zooming
the map image in or out to display an image of,
respectively, a smaller or larger geographical area, and
5   means for varying the displayed data relating to the at
least one place of interest on the visual display unit so
as to take account of the smaller or larger geographical
area.

10   10.   A method according to claim 9, wherein the client
computer (10) includes means for formulating a further
request to the information server (12), to identify places
of interest lying within the smaller or larger geographical
area.

15

11.   A method according to any of the preceding claims,
including the steps of:
      storing on the map server computer (11) a list of
categories of places of interest;
20   retrieving the list with the map data; and,
      displaying on the visual display unit (1) a respective
icon (6,7,8,9) for each said category.

12.   A method according to any of the preceding claims,
25   wherein the request is effected by activation of a
respective icon on the visual display unit (1).

13.   A method according to any of the preceding claims,
wherein the client computer (10) includes locating means
30   for establishing the current geographical location of the
client computer (10), and including the step of passing the
current geographical location of the client computer (10)
to at least one of the map server computer (11) and the
information server computer (12).

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14.   A method according to claim 13, wherein the locating
means uses the Global Positioning System.

15.   A method according to claim 13, wherein the locating
5   means includes a cellular telephone.

16.   A method according to any of claims 13 to 15, wherein
the client computer (10) includes means for superimposing
on the image an icon indicative of the current geographical
10   location.

17.   A computer system, the computer system comprising:
        a map server computer (11) for storing map data
representative of a map of a geographical area and
15   coordinate data representative of the spatial coordinates
of at least one point lying within the area represented by
the map;
        an information server computer (12) for storing
information data representative of at least one place of
20   interest within the geographical area, said data including
data representative of the spatial coordinates of the place
of interest within the area; and,
        a client computer (10), the client computer (10)
having a visual display unit (1);
25   wherein the client computer (10) includes
            means for transmitting a map request to the map
        server computer (11) to request transfer to the client
        computer (10) of the map data and the coordinate data
        associated with the area represented by the map,
30   means for displaying an image of the map on the
        visual display unit (1), and
            means for transmitting an information request to
        the information server computer (12) to identify
        places of interest known to it and lying within the
35   geographical area,

wherein the information server computer (12) includes means for transmitting to the client computer (10) in response to the information request the data representative of at least one place of interest within the geographical
5   area, and

wherein the client computer (10) includes means for displaying said data associated with the place of interest on the visual display unit (1).

10   18.   A computer system according to claim 17, wherein the client computer (10) includes means for formulating the information request by including coordinate data provided by the map server (11).

15   19.   A computer system according to claim 17, wherein the client computer (10) includes means for formulating the map request by including coordinate data provided by the information server (12).

20   20.   A computer system according to any of claims 17 to 19, wherein the client computer (10) includes means for superimposing information relating to the place of interest on the image on the visual display unit (1), at a position on the image corresponding to the location of the place of
25   interest on the map.

21.   A computer system according to claim 20, wherein the information superimposed on the image is a hypertext link.

30   22.   A computer system according to claim 20 or claim 21, wherein the client computer (10) includes means for scrolling the map image to display an image of a different geographical area, and means for varying the displayed data relating to the at least one place of interest on the
35   visual display unit so as to take account of the change in the displayed geographical area.

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23.   A computer system according to claim 22, wherein the
client computer (10) includes means for varying the
information from the information server computer (12) which
is displayed, in response to scrolling of the map image.

5

24.   A computer system according to claim 23, wherein the
client computer (10) includes means for formulating a
further request to the information server computer (12), to
identify places of interest lying within the different

10   geographical area.

25.   A computer system according to any of claims 17 to 24,
wherein the client computer (10) includes means for zooming
the map image in or out to display an image of,

15   respectively, a smaller or larger geographical area, and
means for varying the displayed data relating to the at
least one place of interest on the visual display unit so
as to take account of the smaller or larger geographical
area.

20

26.   A computer system according to claim 25, wherein the
client computer (10) includes means for formulating a
further request to the information server computer (12), to
identify places of interest lying within the smaller or

25   larger geographical area.

27.   A computer system according to any of claims 17 to 26,
wherein the client computer (10) includes locating means
for establishing the current geographical location of the

30   client computer (10) and means for passing the current
geographical location of the client computer (10) to at
least one of the map server computer (11) and the
information server computer (12).

35   28.   A computer system, substantially as described with
reference to the accompanying drawings.

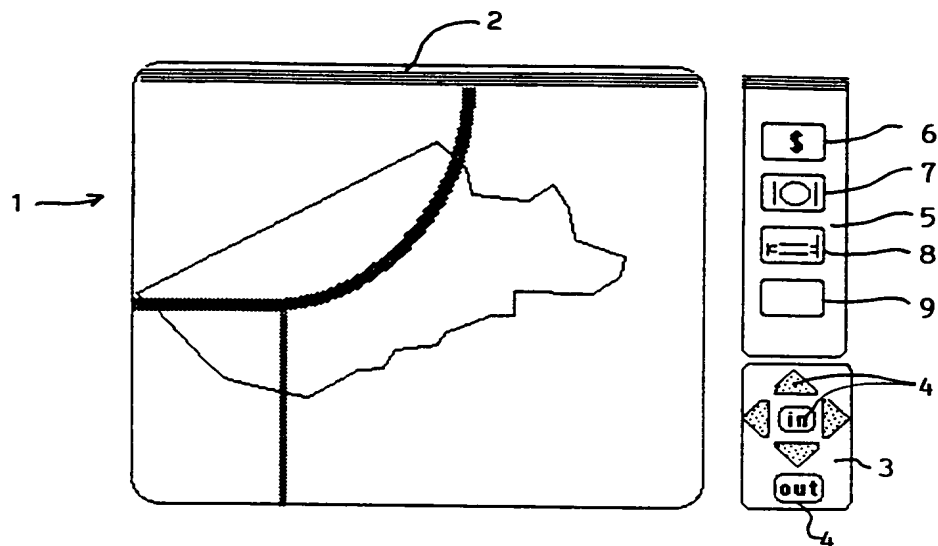29.   A method of operating a computer system, substantially as described with reference to the accompanying drawings.

FIGURE 1

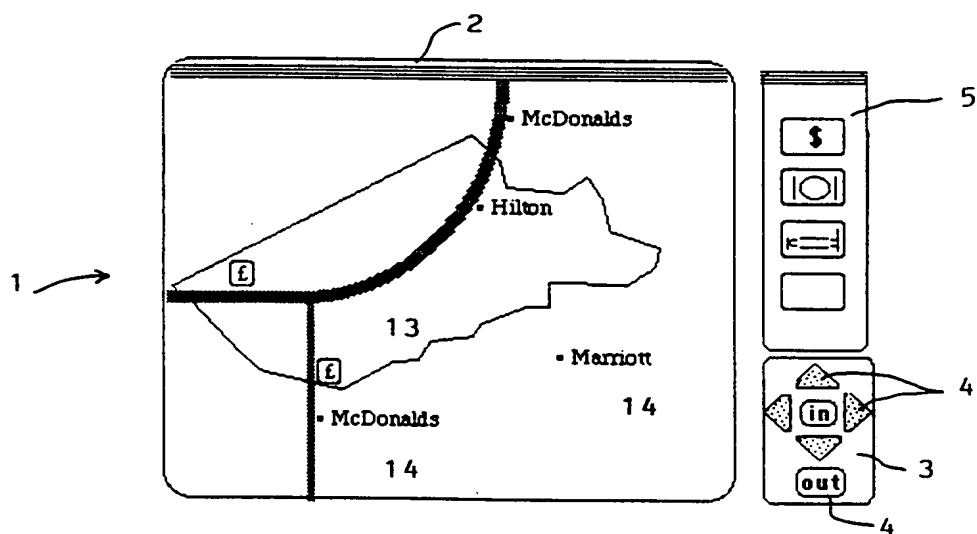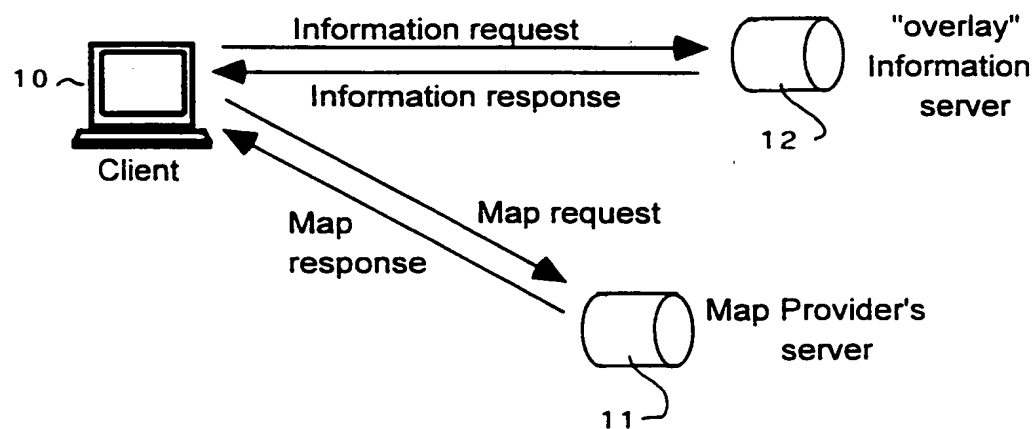FIGURE 2

FIGURE 3

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6   G06F17/30   G01C21/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6   G06F   G01C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	1994 VEHICLE NAVIGATION AND INFORMATION SYSTEMS CONFERENCE PROCEEDINGS (CAT. NO.94CH35703), PROCEEDINGS OF VNIS'94 - 1994 VEHICLE NAVIGATION AND INFORMATION SYSTEMS CONFERENCE, YOKOHAMA, JAPAN, 31 AUG.-2 SEPT. 1994, ISBN 0-7803-2105-7, 1994, NEW YORK, NY, USA, IEEE, USA, pages 591-596, XP000612712 ARIKAWA M: "Personal dynamic maps based on distributed geographic information servers" see page 591, left-hand column, line 1 - page 593, left-hand column, paragraph 2.2 see page 593, right-hand column, paragraph 3.2 see page 596, left-hand column, line 9 - line 44 --- -/--	1-27

[X] Further documents are listed in the continuation of box C.   [X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DATABASE, APRIL-MAY 1995, USA, vol. 18, no. 2, ISSN 0162-4105, pages 65-67, XP000612268 DAVIS P: "An interactive hypermedia map viewer (the Xerox PARC map server)" see the whole document ---	1-27
A	EP,A,0 539 143 (PIONEER ELECTRONIC CORP) 28 April 1993 see abstract; claims; figures 1,7-12 ---	1-27
A	EP,A,0 379 198 (SHARP KK) 25 July 1990 see column 2, line 26 - column 3, line 13; claims -----	1-27

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		JP-A-	5113754	07-05-93
		EP-A-	0747670	11-12-96
EP-A-0379198	25-07-90	JP-A-	2189488	25-07-90
		JP-A-	2206900	16-08-90
		AU-B-	614893	12-09-91
		AU-A-	4799790	26-07-90
		DE-D-	69021900	05-10-95
		DE-T-	69021900	18-04-96
		US-A-	5025261	18-06-91